

Field Report

Parker River National Wildlife Refuge

■ 1.0 Summary

The Parker River National Wildlife Refuge (NWR) is located on Plum Island on the Atlantic Coast in Essex County, Massachusetts, 38 miles northeast of Boston. It includes over six miles of coastline and is one of the few unspoiled natural barrier beach islands left in the northeastern part of the United States. The Parker River NWR was established in 1942 to provide feeding, resting and nesting habitat for migratory birds. It is located along the Atlantic Flyway and is of special significance to waterfowl and shorebirds, including the threatened piping plover. Due to its location along the Atlantic Ocean in the midst of a heavily populated area, the Parker River NWR has had to address recreational needs as well.

The Parker River NWR consists of 4,662 acres that incorporate a variety of characteristics. These include barrier beach and dunes, salt marsh and mud flats and additional fresh water marsh located in three major impoundments. Also found on the Refuge are grassland, forest, brush and 74 acres of administrative land, including buildings, roads and parking lots. Twelve non-contiguous acres were purchased on the mainland side of the Plum Island Turnpike for the development of a Refuge Headquarters and Visitor Center. The Refuge shares Plum Island with a residential community at the northern end of the island that reaches a population of over 5,000 persons in the summer months. This area, located in the towns of Newburyport and Newbury, was traditionally a seasonal community, but is now inhabited primarily by year-round residents. The southern tip of Plum Island includes the approximately 75-acre Sandy Point Reservation, which is owned and operated by the Massachusetts Department of Environmental Management (DEM).

The proposed new Visitor Center represents a major change in the operation of the Parker River NWR. The ability to provide interpretive and educational services will be greatly enhanced by a dedicated facility. The potential Alternative Transportation System (ATS) options for Parker River relate to the implementation of this facility. ATS options include:

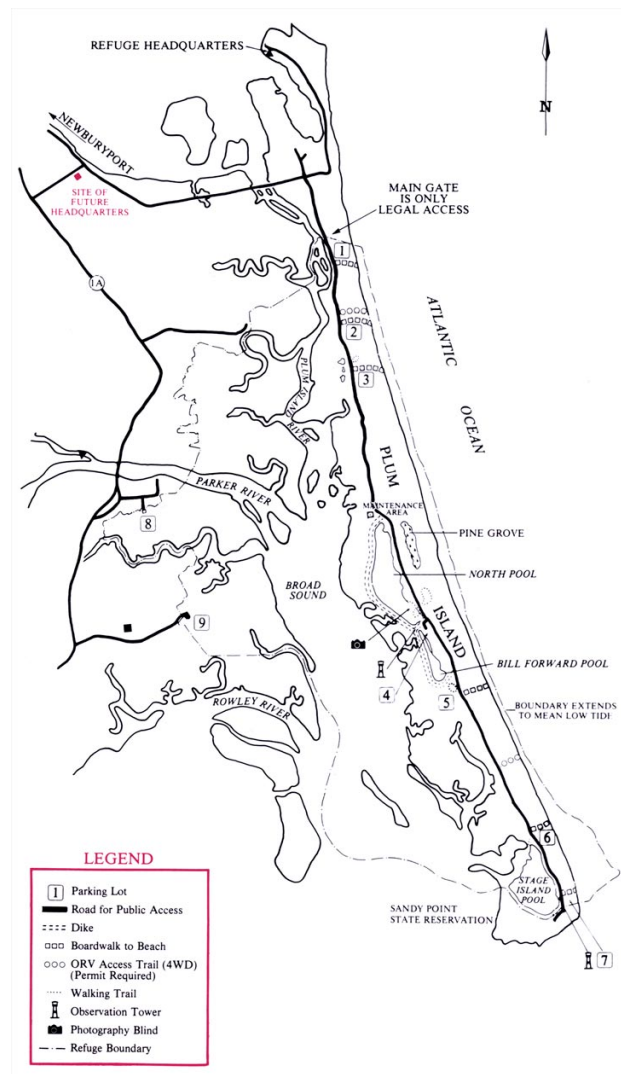
- Purchase of a clean fuel bus by the NWR for the purpose of providing guided tours of the NWR. Given the limited parking in the Refuge and the educational and interpretive goals of Refuge management, guided tours are preferred to a general transit service along the main Refuge road.
- Both the Merrimack Valley Regional Transit Authority (MVRTA) and a private, rubber-tired trolley operated from downtown Newburyport provide service near the Refuge entrance. While regular transit service within the Refuge does not appear to be a realistic option, improved service could be provided to the Refuge entrance.

■ 2.0 Background Information

2.1 Location

The Parker River NWR is located primarily on Plum Island, 38 miles northeast of Boston. The Plum Island portion of the Refuge is located in three communities; Newbury, Rowley and Ipswich. The new 12-acre section purchased for the Visitor Center is located off-island in the city of Newburyport. Other mainland sections of the Refuge are located in Rowley and Ipswich. The Refuge borders the Atlantic Ocean and incorporates Broad Sound and portions of the Parker and Plum Island Rivers. While the Parker River NWR is located in a heavily populated region near the interchange of I-95 and I-495, access to the Refuge itself is limited to two-lane local streets. Figure 1 contains a map of the Refuge.

Figure 1. Map of Parker River National Wildlife Refuge



2.2 Administration and Classification

The Parker River NWR is a National Wildlife Refuge established under the auspices of the Migratory Bird Conservation Commission. The original Refuge consisted of 1,600 acres purchased from the Massachusetts Audubon Society. An additional 3,000 acres were added using funds available from the Migratory Bird Hunting Stamp Act. The basic authorities for Refuge Administration are the Migratory Bird Treat Act and the Migratory Bird Conservation Act.

2.3 Physical Description

The Parker River NWR consists of 4,662 acres that incorporate a variety of characteristics. These include 818 acres of barrier beach and dunes (see Figure 2), 2,994 acres of salt marsh and mud flats and 265 acres of fresh water marsh located in three major impoundments (see Figure 3). The remaining 573 acres include 88 acres of grassland, 11 acres of forest, 400 acres of brush and 74 acres of administrative land, including buildings, roads and parking lots. Twelve non-contiguous acres were purchased on the mainland side of the Plum Island Turnpike for development of a Visitor Center. The Refuge shares Plum Island with a residential community at the northern end of the island that reaches a population of over 5,000 in the summer months. This area, located in the towns of Newburyport and Newbury, was traditionally a seasonal community, but is now inhabited primarily by year-round residents. The southern tip of Plum Island includes the 75-acre Sandy Point Reservation, which is owned and operated by the Massachusetts DEM.

Figure 2. Dunes



Figure 3. Estuary



Access to the Barrier Island portion is through a single point at the northern end of the Refuge. There are two access points to the mainland portion of the Refuge.

2.4 Mission and Goals of the National Wildlife Refuge

The goals of the Parker River NWR were identified in the 1986 Master Plan as follows:

- Achieve the maximum number of migratory bird species indigenous to the Refuge biotype consistent with other important management needs and habitat limitations;
- Contribute to the Migratory Bird Program goals for wintering black duck populations;
- Achieve a duck breeding population at or above the 1975-1980 average, based on five key species: mallard, black, gadwall, green-winged teal, and blue-winged teal;
- Maintain a resident Canada goose population that does not exceed the 1975-1980 average population of 200 to 300 birds;
- Protect and enhance breeding and maintenance habitat for non-game birds, especially those with decreasing populations;
- Manage Refuge lands for a diversity of mammal and non-migratory species at optimum production levels by providing a wide range of habitats at various successional stages;
- Manage, preserve and maintain the existing Research Natural Area;
- Promote environmental education and interpretive programs to broaden public awareness of and appreciation for the natural and managed environments of the Refuge; and
- Provide visitors with a safe and enjoyable recreational experience without conflicting with the basic Refuge purpose.

The stated goal of the proposed new Visitor Center is to “provide a place where people can gain an understanding of how they are partners with the USFWS in the conservation of the wildlife resources of our nation. Visitors will also have the opportunity to discover recreational activities that will not harm the island’s natural resources.”

2.5 Visitation Levels and Visitor Profile

Since the issuance of its Master Plan in 1986, the Parker River NWR has taken actions to emphasize the protection of wildlife. Recreational beach use, while still accommodated, has been reduced in favor of more passive recreation such as birding and nature photography. The parking supply has been reduced and since the mid-1980s, the Refuge has instituted beach closures to protect nesting areas of the piping plover. The first partial closure was initiated in 1986 and full closures have been implemented during parts of the peak season since 1991. Entrance and user fees were charged for the first time in the late 1980s. The impact on visitation has been significant with visitation declining from a peak of 476,000 annually in 1977 to 233,000 in 1997. In 1998, visitation climbed back to 259,000

due largely to an increase in off-peak season visitation. The party size used to calculate visitation was lowered from 2.85 persons per vehicle to 2.4 persons in 1995, based on the results of a Refuge visitation study.

Visitation during the three peak months of July, August, and September has been in the range of 40 percent of the annual total over the past several years. Variation occurs largely due to the length of closures required to protect the piping plover nesting areas. The University of New Hampshire (UNH) conducted an economic study in 1994 to assess the impact of closures on the local economy. Closures have generally occurred between April 1 and July 1 but has been extended as necessary in specific years.

The survey taken for the UNH studies indicated that 60 percent of Refuge visitors were female with an average age of 43, a household income of over \$40,000 and a college education. An average visit was two and one-half hours and most visitors were regular users, visiting once or twice per month. On average, visitors had been using the Refuge for 11 years. Primary activities cited were as follows:

- Beach 29%
- Wildlife observation 25%
- Walking 16%
- Birding 14%
- Other 16%

Survey respondents expressed strong satisfaction with their experience with 96 percent ranking their overall experience as good or excellent. The overwhelming majority (89 percent) said the Refuge was well managed and 80 percent expressed support for the beach closures, although 25 percent did say that it detracted from their experience.

The vast majority of visitors are from Massachusetts (77 percent) followed by New Hampshire at 13 percent. Of those residing in Massachusetts 57 percent were from Essex County and 27 percent from neighboring Middlesex County. Approximately 87 percent said they were visiting on a day trip, and of the 13 percent staying overnight in the area most were in neighboring communities. Of those staying only for the day, 26 percent said that they would visit downtown Newburyport on the same trip, indicating a strong economic impact on that City. Estimates of party expenditures were between \$25 (median) and \$54 (mean).

■ 3.0 Existing Conditions, Issues and Concerns

3.1 Transportation Conditions, Issues and Concern

A single road that serves the island portion of the Refuge runs south from the main entrance on Sunset Road, to Sandy Point at the southern tip. The northern half of the road is paved; the southern half is not. The road has a speed limit of 25 MPH to protect both

wildlife and visitors. The Refuge uses both speed bumps and intensive enforcement activity to keep speeds down. Access to the island itself is via a single road, the Plum Island Turnpike. This road is accessed from Water Street in the city of Newburyport and Rolfe's Lane/Ocean Avenue, which connects to State Route 1A in the Town of Newbury. While one must travel local streets through either Newburyport or Newbury, the Refuge is easily accessible from I-95 and I-495. Over one million people live within a 25-mile radius of the Refuge and over eight million live within a 100-mile radius.

A number of significant transportation issues impact the Refuge:

- **Parking** – In order to accomplish the conservation goals set in the Master Plan, parking has been significantly reduced since the 1970s. There are currently 362 parking spaces on the NWR portion of the island, in 12 different lots. The largest of these is Lot No. 1 (see Figure 4), located adjacent to the entrance, which contains 138 automobile and two bus spaces or over one-third of the supply. The next largest is Lot No. 4, (38 spaces) which serves the popular Hellcat Interpretive Trail. Of the 362 NWR managed spaces on the island, 256 are available for beach access, 78 are available for wildlife observation (see Figure 5) and related activities and the remainder are shared. The Sandy Point State Reservation which is managed by the Massachusetts DEM includes an additional 75.

Figure 4. Parking Lot No. 1



Figure 5. Trail Parking



Parking capacity is frequently exceeded on summer days when the beach areas are open to general use. The Refuge used to operate on a “one-out, one-in” basis for vehicles when capacity was reached. In an attempt to reduce the long lines of traffic that formed outside of the entrance, a minimum two-hour closure is now instituted when parking areas fill. This strategy has generally been successful in reducing waiting lines, although some visitors still prefer to wait the full two hours in order to assure they will get in.

A complicating factor is that the Parker NWR charges a \$5.00 per car entrance fee (\$2.00 for pedestrians and bicyclists), while entry to Sandy Point is free. NWR personnel inform visitors who enter the Refuge and say they are going to Sandy Point that they are not entitled to stop on the Refuge or use its facilities. This creates enforcement difficulties for the NWR, and some inevitable revenue leakage. Approximately

50 percent of the people coming through the entry gate (129,000 in 1998) report that Sandy Point is their destination and do not pay a fee. Refuge management believes that a percentage of these users are using Refuge facilities. When the Sandy Point parking lot does fill up, state officials inform the NWR, and no free admissions are permitted after that point.

Two additional 25-car parking areas are provided on the mainland portion of the Refuge. These are open seasonally and used primarily for hunting and shellfishing access, and are located off Route 1A from the towns of Rowley and Newbury.

- **Bicycling/Hiking** – A number of popular trails are provided on the island portion of the Refuge, including seven different boardwalks used to access beach or marsh areas. The Refuge converted a number of trails to raised boardwalks in order to preserve the dune environment, provide for easier maintenance and provide the user with scenic views of the Refuge.

Accommodation of bicycles has presented a more difficult challenge for Refuge managers. The large population base surrounding the Refuge, the heavy volumes of traffic on many of the region's roads and the magnificent scenery and views all combine to make the Refuge a popular bicycle destination. Bicycling conditions are not optimal, however, due to the narrow width of the road, heavy volumes of peak season traffic and the fact that many drivers are distracted while viewing the scenery. Poor sight-lines in some areas also put bicyclists at risk. Since much of the road borders marsh or other wetlands, opportunities for widening to accommodate bicycling are minimal. In addition, widening the road would encourage higher automobile speeds, which already require significant enforcement efforts. The Refuge does not permit off-road bicycling due to the sensitive nature of the environment. Refuge management believes that bicyclists will continue to use the facilities, and that education and enforcement are the only viable options at this time for addressing safety issues.

- **Public Transportation** – The MVRTA provides summer season service to Plum Island, as an extension of its route between Haverhill and Newburyport. The route only serves the residential end of the island and thus does not directly access the Refuge entrance. Service is infrequent, with four buses per day on approximately three-hour headways. A private trolley service has recently been initiated in Newburyport. It primarily provides tours around the region, including Plum Island, but could be expanded to provide tours on the Refuge itself. Opportunities for serving the Refuge with existing public transportation services are limited. Attractions in the Refuge are spread out, and with low speeds and sightseeing traffic, running times would be long. Except for a few summer weekends, it is not likely that such service would attract significant ridership.
- **Traffic Impact of Visitor Center** – The location of the proposed new Visitor Center is on the south side of Plum Island Turnpike, just east of where Water Street and Ocean Avenue come together. The Massachusetts Audubon Society's Joppa Flats Education Center is currently under construction across the road along the banks of the Merrimack River. There have been concerns raised in Newburyport about traffic impacts at this location, including increased volumes and pedestrian safety for those crossing between the Parker River NWR Visitor Center and Joppa Flats. Analysis by

the NWR has shown that traffic impacts will be minimal, particularly at peak hour. The Refuge anticipates that many users of the Center will be educational groups, who will then tour the Refuge by bus.

3.2 Community Development Conditions, Issues and Concerns

The Refuge is located in three communities, Newbury, Rowley, and Ipswich. The major route of access is through the city of Newburyport, which serves as the primary gateway community to the Refuge. Newburyport has been transformed over the past 25 years from an economically distressed maritime community to a major center of tourism and residential development. Most downtown commercial buildings have been restored to their early 1800s appearance and contain a wide range of shops and restaurants. A waterfront boardwalk and park have been developed and expensive condominiums have been developed along the waterfront as well. The MBTA recently restored commuter rail service to Newburyport, creating additional development pressure. Marketing efforts designed to attract tourists to Newburyport feature the Parker River NWR as one of its major attractions.

There is also heavy tourist activity in other nearby communities, particularly Salisbury, Massachusetts and Seabrook, New Hampshire. Newbury and Rowley are primarily residential communities with limited tourist amenities while Ipswich contains Crane's Beach/Castle Hill, another very popular summer tourist destination.

The residential portion of Plum Island is divided between Newburyport and Newbury, with each community supplying services to its portion of the Island. The close proximity of dense residential areas to the Refuge has created a need for strong educational and enforcement efforts with regard to the plover protection program and required beach closures. Refuge management believes that these efforts have generally been successful.

3.3 Natural or Cultural Resource Conditions, Issues and Concerns

As noted in Section 2.5, Mission and Goals of the Refuge, the primary goals of the last Master Plan related to wildlife management and natural resource preservation. This led to a significant reduction in the number of parking spaces and subsequent decline in annual visitation. Actions taken to protect the piping plover are consistent with the Master Plan, as well as the Piping Plover Recovery Plan, the Refuge Recreation Act of 1962 and the Refuge System Administration Act of 1966. The two refuge acts require that all recreational activities be reviewed for compatibility with endangered or threatened species protection efforts. Beginning in the early 1990s, full beach closure during plover nesting season was regarded as the only way of minimizing human impacts on nesting areas. Construction of enclosures around plover nesting areas has been undertaken to protect nesting areas from other predators.

There are remains of Native American hunting and fishing camps on the Refuge, in addition to sites of Colonial settlement.

3.4 Recreation Conditions, Issues and Concerns

Primary uses of the Refuge are beach activities (see Figure 6), bird watching, wildlife observation photography, and hiking. Fishing, hunting and clamming are also activities that may be undertaken in season with proper permits. Major periods of activity for birdwatching are in May and September when warblers stop at the Refuge along their migration path. October is the most popular month for educational groups, and annually 3,000 to 5,000 students and teachers use the Refuge.

Figure 6. Beach Activity



Off-road vehicles are permitted on the beach for surf fishing purposes only. There are currently 171 permits outstanding; 25 vehicles are allowed on the beach at one time from mid-August through Labor Day. A controlled public deer hunt takes place in December, with hunting allowed only on the island portion. There is a limitation of 45 hunters per day allowed in the Refuge. Canoeing and kayaking are popular activities in the inland tidal areas of the Refuge, although launch sites are limited.

■ 4.0 Planning and Coordination

4.1 Unit Plans

As noted, the Master Plan for the Parker River NWR was completed in 1986. Current unit plans center around the proposed new Visitor Center on the Plum Island Turnpike. The

proposed Center will include 5,350 square feet for public use, including 1,000 square feet of exhibit space and an 1,150-square-foot multipurpose room. A sales area, Refuge tour area, and lab/classroom are other key features. An additional 4,050 feet is proposed for Refuge administration and staff support. A separate maintenance facility will also be provided on the grounds. This will enable the Refuge to consolidate its administrative headquarters, which is now located 2.5 miles north of the Refuge on Plum Island, and its maintenance facilities, which are located on the Refuge itself. A total of 25 staff parking spaces will be provided and 50 public parking spaces, in addition to three or four bus spaces. This facility is a \$7 million project that will enable the Refuge to greatly increase its educational programs and enhance the quality of visits for both students and the general public.

4.2 Public and Agency Coordination

The Parker River NWR works closely with the local communities in management and planning activities for the Refuge. Refuge staff work frequently with city/town boards in the four municipalities where it owns land. The 1994 UNH economic study did indicate that the economic impact of the Refuge on nearby communities is significant. The Refuge has an excellent working relationship with the Massachusetts DEM, which manages Sandy Point. There is an active Friends group supporting the Refuge and a close working relationship with the Massachusetts Audubon Society.

■ 5.0 Assessment of Need and System Options

5.1 Magnitude of Need

The current parking supply is viewed by Refuge Management to be in balance with the goals and objectives of the Parker River NWR. While public transportation could permit larger number of beach visitors on peak summer weekends, this is not a high priority. With the development of the new Visitor Center, the Refuge management does see an opportunity to increase visitation in a controlled fashion. ATS are seen as an important tool in accomplishing this goal. The Refuge prefers that any significant increases in visitation come through guided tours and school-based educational programs.

5.2 Feasible Transit Alternatives

- The Refuge would like to obtain a clean fuel bus for use in providing tours from the new Visitor Center. While the initial purchase would involve only one small to medium sized bus, the fleet could be increased as demand for services increases.
- Service levels of existing public transportation to the Refuge could be improved through more frequent service and institution of a stop at the Refuge entrance. This could be accomplished through either the MVRTA Plum Island route or the

Newburyport trolley service. Users would be limited primarily to the beach area near Parking Lot No. 1, however, which is within walking distance of the entrance.

- Improved advanced information systems would be helpful to the Refuge in managing traffic on crowded summer days. Alternatives include advanced signs on approach roads, including I-95 and I-495, notifying motorists when the parking areas are full. Information could also be provided via the Internet or a toll-free number, which would provide information on other visitor opportunities in the region. This system could be formalized and incorporated into the new Visitor Center when it is opened.

■ 6.0 Bibliography

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■ 7.0 Persons Interviewed

John L. Fillio, Refuge Manager, Parker River NWR

Steve Haydock, Outdoor Recreation Planner, Parker River NWR

Frank Drauszewski, Deputy Refuge Manager, Parker River NWR

Nancy Colbert, Newburyport City Planner